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Tubulicrinis martinicensis sp. nov., a corticioid species from Martinique (French West Indies)

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Abstract—The new species *Tubulicrinis martinicensis*, collected in Martinique Island (French West Indies), is described and illustrated. The differences from other species with cylindric cystidia with obtuse apex are discussed, and this new species is included in the key to the species of *Tubulicrinis* known worldwide.

Key words—*Basidiomycota*, *Tubulicrinaceae, Hymenochaetales*

Introduction

Mycological inventories initiated by R. Courtecuisse have been carried out in French West Indies for several years on behalf of the French forestry office (Office National des Forêts; Courtecuisse 2006, Voiry & Courtecuisse 2012, Courtecuisse & Welti 2013). Several new species (primarily in *Agaricomycetes* and *Sordariomycetes*) have been described in this project; here we describe the first new corticioid species.

Tubulicrinis Donk is a morphologically well-delimited corticioid genus belonging to the family *Tubulicrinaceae* Jülich (Jülich 1982) in the order *Hymenochaetales* Oberw. (Frey et al. 1977). Its key character is the presence of long cystidia with thick walls and multiple roots, dissolving in KOH (Hjortstam et al. 1988, Bernicchia & Gorjón 2010) and often strongly amyloid (Larsson 2007). The type species, *T. glebulosus* (Bres.) Donk, is non-typified (Hjortstam 2001) and closely related to *T. gracillimus* (Ellis & Everh. ex D.P. Rogers & H.S. Jacks.) G. Cunn.

In this article, we describe as new and illustrate *T. martinicensis,* discuss its similarities and differences to closely related species, and propose a modification of the worldwide key to the genus by Hjortstam (2001).

Materials & methods

Macroscopic and microscopic studies were based on fresh and dried material. Sections were prepared with a razor blade and observed in several solutions: ammoniacal Congo Red, 3% KOH with additions of 1% phloxine B, Melzer's, and Cotton Blue. The dissolution time of cystidia was computed using 3% KOH. Measurements were done on photos taken from the microscope under 1000× magnification, using Mycomètre software (Fannechère 2011). In spore measurements the following format was used: "N; (minimum–) d1–d9 (–maximum) µm", where "N" is the number of spores in the sample and "d1"and "d9" are the 1st and 9th decile measurements (Fannechère 2005). Spore measurements were based on spores seen in profile and obtained from a spore print (Duhem 2010), in Melzer's.

Specimens are conserved in the Herbarium, Département de Botanique, Université de Lille, Lille, France (LIP); the Herbarium, Department of Biological and Environmental Sciences, University of Gothenburg, Göteborg, Sweden (GB); and the private herbariums of G. Gruhn (hb. Gruhn) and F. Dämmrich (hb. Dämmrich). Additional material was examined from the Herbarium, Université Claude Bernard, Lyon, France (LY) and from the private herbariums of M. Gérard (hb. Gérard) and G. Trichies (hb. Trichies).

Tubulicrinis martinicensis G. Gruhn, Hallenb. & Courtec., **sp. nov.** Figs 1–3

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Differs from *Tubulicrinis confusus* by its narrower spores.

Type: French West Indies, Martinique, Les Anses d'Arlet, Grande Anse, Morne Champagne, on deeply white-rotted wood of undetermined deciduous tree, in a xerophilic coastal forest, 7 July 2012, leg. R. Courtecuisse (**Holotype**, LIP GG-MAR12-206. **Isotypes**, hb. Gruhn MAR12-206; hb.Dämmrich D11157; GB).

Etymology: *martinicensis* epithet refers to the site of collection.

Basidiome annual, effused (30 × 10 cm), adnate, strongly attached to the wood, cream-colored when fresh, irregularly cracked into polygons. Light ochraceous and concolorous with the supporting wood when dry. Hymenium uneven when fresh, smooth when dry. Context homogeneous, not stratified, concolorous with the hymenium in the whole profile, 250–300 µm thick, cracking into pieces when dry. Margin thin and distinct, frequently floccose, concolorous with the hymenium. Spore print white.

Hyphal system monomitic, context made up of a dense hyphal texture; clamp connections present at all septa; hyphae thin-walled and smooth in context but slightly thick-walled in subiculum, thin-walled in subhymenium, 2–3 µm in diam., non amyloid. Lyocystidia smooth, irregularly cylindrical, distinctly sinuous in the upper part and rounded at apex, without crystals. Wall

Fig. 1. ***Tubulicrinis martinicensis*** (holotype, LIP GG-MAR12-206), fresh material. Scale bar = 2 cm. Photo G. Gruhn.

thick (2–4 µm) at the base and slightly amyloid. About two thirds of the outer wall is irregularly inflated. Upwards, the wall becomes gradually thinner up to the top and is quite thin along the apical third of the length (30–40 µm). Total dimensions: (60–)80–92(–112) × 7–7.5(–9) µm, the wider part located in the middle of the length. Near the apex sometimes slightly clavate with a diameter of 4.5–5.5 µm. Lumen usually symmetrical. Cystidia originate deep in the context, projecting up to 50–65 µm above the level of the hymenium; multiple roots have not been observed; external cystidial wall dissolving in 3% KOH between 3 to 20 minutes. Basidia in a dense hymenium, short clavate, 9–12(–15) × 3.5–4 µm, with one or several minor constrictions, thin-walled, contents homogenous; sterigmata 4, thin, 3 µm long, inamyloid. Basidiospores subcylindrical to suballantoid, multiguttulate, N = 44, (5.1–)5.6–7.0(–7.1) × (1.8–)1.9–2.6 µm, Qm = 2.9; thin-walled and smooth, inamyloid, non-dextrinoid, non-cyanophilous.

Additional specimens examined:

Tubulicrinis gracillimus: **FRANCE**, Vendée, Île d'Yeu, between St-Sauveur and Port de la Meule,. on *Quercus ilex*, leg. M. Gérard, det. B. Duhem (hb.Gérard MG2440); **Moselle**, commune de Moyeuvre, Forêt Domaniale de Moyeuvre, on decorticated *Betula*, leg. & det. G. Trichies (hb. Trichies GT00612). **SWITZERLAND**, **Bern**, Berner Oberland, Grindelwald, on *Juniperus* sp., leg. & det. F. Dämmrich (hb. Dämmrich D8312).

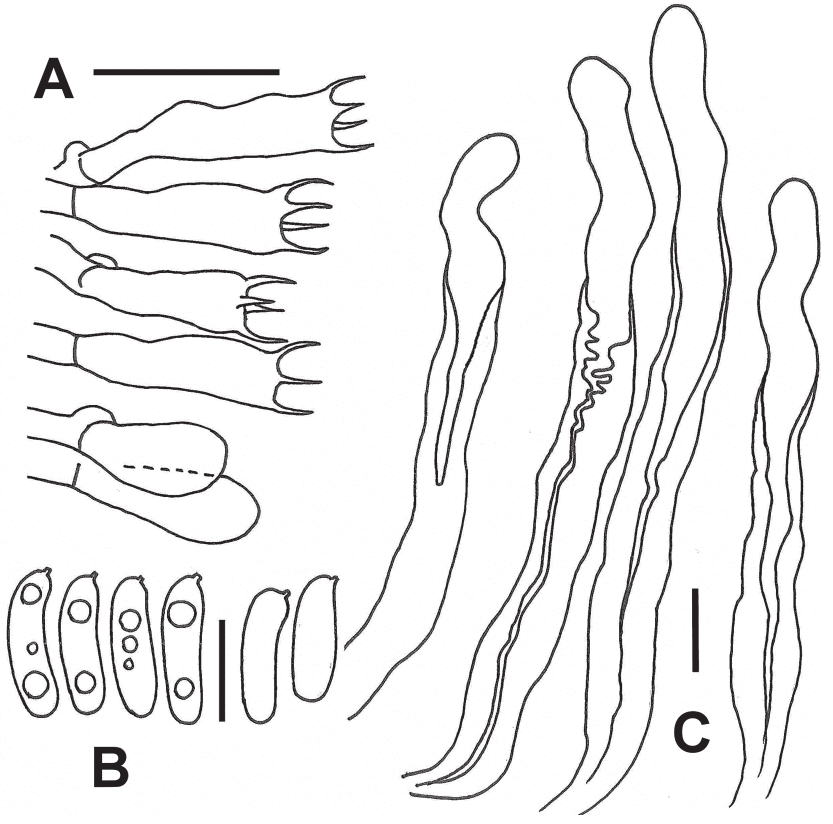

Fig. 2. ***Tubulicrinis martinicensis*** (holotype, LIP GG-MAR12-206), hymenial details observed in KOH-phloxine. A. mature and young basidia; B. spores C. cystidia.
Scale bars: A, C = 10 µm; B = 5 µm. Drawings G. Gruhn.

Tubulicrinis incrassatus: **FRANCE**, **Rhône**, St-Martin-en-Haut, lieu-dit le Bois de Remayou, on *Pinus sylvestris*, leg. & det. G. Gruhn, conf. N. Hallenberg (hb. Gruhn GG-151011-016). **FRENCH WEST INDIES**, **Guadeloupe**, Basse-Terre, Carrère, on dead stump, leg. & det. J. Boidin (LY JB-8106).

Discussion

Tubulicrinis martinicensis is well characterized by the shape of its long tubular cystidia with obtuse apices and by its narrow slightly allantoid spores.

The new species is close to *T. gracillimus*, which shows long cylindrical lyocystidia with a weak amyloid reaction. The shape of the lyocystidia is similar

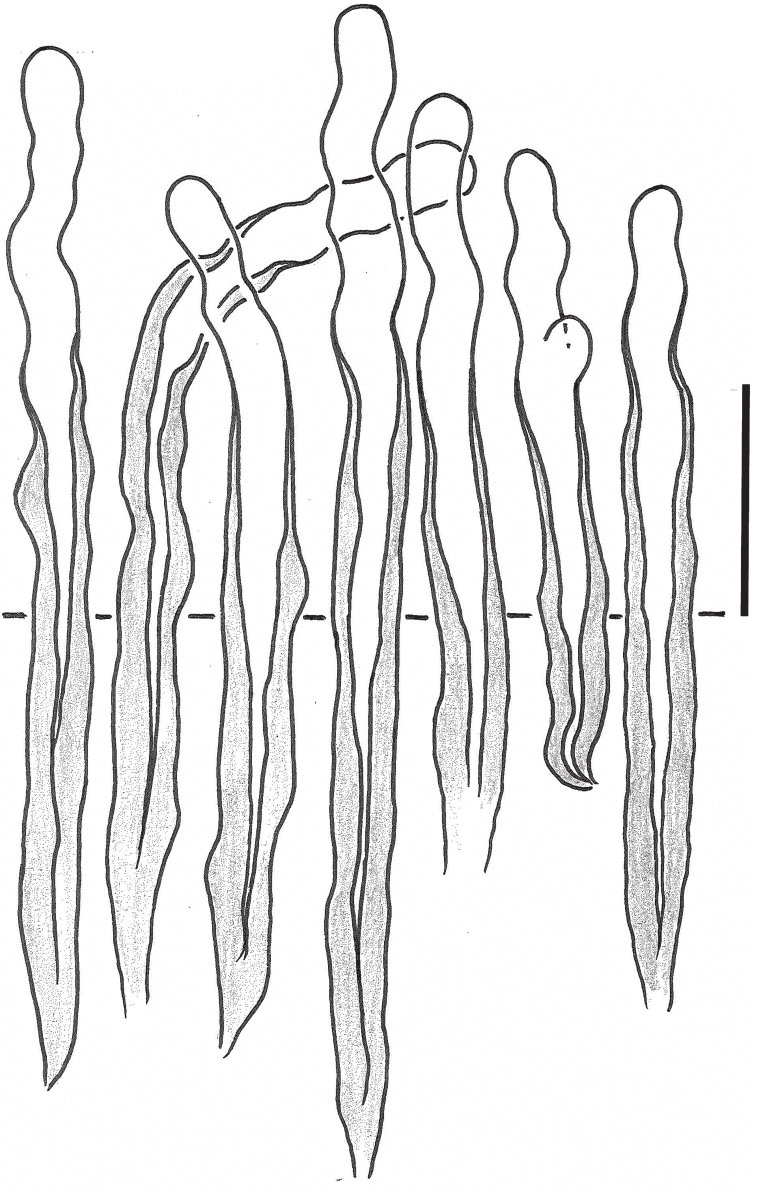

Fig. 3. ***Tubulicrinis martinicensis*** (holotype, LIP GG-MAR12-206).
Cystidia observed in Melzer's, with the horizontal line showing the emergence level.
Scale bar = 25 µm. Drawings G. Gruhn.

in both species, including a rounded apex without crystals, but in *T. gracillimus* the thin-walled upper part is short, less than 20 µm long (Hjortstam & Larsson 1988). Moreover, the spores of *T. gracillimus* are longer and narrower (7.5–8.5 × 1.75–2.0 µm; Hjortstam & Larsson 1988).

Tubulicrinis confusus K.H. Larss. & Hjortstam is a rare species described from Norway (Hjortstam & Larsson 1986). The cystidia are distinctly sinuous, like those of *T. martinicensis*, but the diameters are smaller and become narrower towards apex (Hjortstam et al. 1988), in contrast to the Martinique species where the diameter widens towards the apex. Moreover, the spores of *T. confusus* are ellipsoid and wider (2.8–3.5 µm diam.; Hjortstam et al. 1988), and its basidiome is odontioid in mature specimens.

Neither can *T. martinicensis* be confused with *T. pseudoborealis* Boidin & Gilles, a tropical species known only from a single collection from Réunion Island (Hjortstam & Ryvarden 2007). The spore dimensions are similar with those of *T. martinicensis*, but the spore shape is ellipsoid to cylindrical. Also, the thin-walled upper part of the lyocystidia is shorter and not sinuous, and the basidiome is thin and porulose (Boidin & Gilles 1988).

Finally, the spores of *T. martinicensis* are close to those of *T. incrassatus* Hallenb., which differs by its typically non-symmetrical cystidia (Hallenberg 1978, Hjortstam & Ryvarden 2007, Bernicchia & Gorjón 2010, Gruhn & Rivoire 2016).

Key to *Tubulicrinis* incorporating *T. martinicensis*

Hjortstam (2001) published a key to known *Tubulicrinis* species, which we propose to modify by inserting *T. martinicensis* [boldface] as follows:

24a (23b). Spores ellipsoid or subcylindrical 25
24b. Spores cylindrical to allantoid 26

25a (24a). Cystidia distinctly sinuous 34
25b. Cystidia otherwise. Réunion ..... ***T. pseudoborealis***

//BREAK//

30a (29b). Basidiomes thick, often cracking conspicuously 31
30b. Basidiomes thinner 32

31a (30a). Spores 5.5–7 × 1.8–2 µm 33
31b. Spores 6.0–9.0 × 1.5–2.25 µm.
Common species, preferably on deciduous wood
(In its broad sense a cosmopolitan species. Note *T. gracillimus*,
which seems to be very close morphologically.) ..... ***T. glebulosus***

32a (30b). Cystidia widened towards the apex, spores 6–8 × 1.5–1.8(–2) µm. Rather common in Northern Europe, also from North America ..... ***T. medius***

32b. Cystidia with subcapitate apex, spores 5.5–9.5 × 1.5–1.8 µm. North America and Europe, rare species ..... ***T. propinquus***

33a (31a). Cystidia sinuous with symmetric lumen. Caribbean ..... ***T. martinicensis***

33b. Cystidia otherwise, with typical asymmetric lumen. Southern Europe, Iran, Caribbean ..... ***T. incrassatus***

34a (25a). Cystidia slightly acute, spores 2.8–3.5 µm wide ..... ***T. confusus***

34b. Cystidia not acute, merely expanding at apex, spores <2.5 µm wide ..... ***T martinicensis***

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